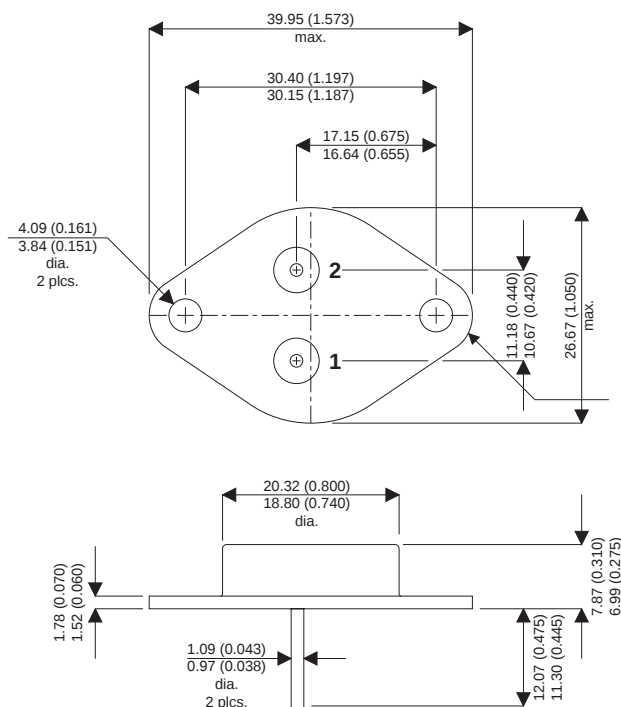


MECHANICAL DATA

Dimensions in mm (inches)



TO-3 Metal Package

Pin 1 – Gate

Pin 2 – Source

Case – Drain

N-CHANNEL POWER MOSFET

V_{DSS}	500V
$I_{D(cont)}$	13A
$R_{DS(on)}$	0.4 Ω

FEATURES

- HERMETICALLY SEALED TO-3 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- SCREENING OPTIONS AVAILABLE

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

V_{GS}	Gate – Source Voltage	$\pm 20V$
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 25^{\circ}C$)	12A
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 100^{\circ}C$)	7.75A
I_{DM}	Pulsed Drain Current ¹	48A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	150W
	Linear Derating Factor	1.2W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	8.0mJ
I_{AR}	Avalanche Current ²	12A
dv/dt	Peak Diode Recovery ³	3.5V/ns
T_J , T_{stg}	Operating and Storage Temperature Range	-55 to +150 $^{\circ}C$
T_L	Lead Temperature 1.6mm (0.63") from case for 10 sec.	300 $^{\circ}C$

Notes

- 1) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$
- 2) @ $V_{DD} = 25\text{V}$, $L \geq 480\mu\text{H}$, $R_G = 25\Omega$, Peak $I_L = 28\text{A}$, Starting $T_J = 25^\circ\text{C}$
- 3) @ $I_{SD} \leq 28\text{A}$, $di/dt \leq 170\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^\circ\text{C}$, Suggested $R_G = 9.1\Omega$

ELECTRICAL CHARACTERISTICS ($T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS							
BV _{DSS}	Drain – Source Breakdown Voltage	V _{GS} = 0	I _D = 1mA	500			V
ΔBV _{DSS}	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I _D = 1mA			0.78		V/°C
R _{DS(on)}	Static Drain – Source On–State Resistance ¹	V _{GS} = 10V	I _D = 7.75A			0.4	Ω
		V _{GS} = 10V	I _D = 12A			0.5	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS}	I _D = 250mA	2		4	V
g _{fs}	Forward Transconductance ¹	V _{DS} ≥ 15V	I _{DS} = 7.75A	5.5			S (Ω)
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0	V _{DS} = 0.8BV _{DSS}			25	μA
			T _J = 125°C			250	
I _{GSS}	Forward Gate – Source Leakage	V _{GS} = 20V				100	nA
I _{GSS}	Reverse Gate – Source Leakage	V _{GS} = –20V				–100	
DYNAMIC CHARACTERISTICS							
C _{iss}	Input Capacitance	V _{GS} = 0			2700		pF
C _{oss}	Output Capacitance	V _{DS} = 25V			600		
C _{rss}	Reverse Transfer Capacitance	f = 1MHz			240		
Q _g	Total Gate Charge	V _{GS} = 10V		55		120	nC
Q _{gs}	Gate – Source Charge	I _D = 12A		5		19	
Q _{gd}	Gate – Drain (“Miller”) Charge	V _{DS} = 0.5BV _{DSS}		27		70	
t _{d(on)}	Turn–On Delay Time	V _{DD} = 250V				35	ns
t _r	Rise Time	I _D = 12A				190	
t _{d(off)}	Turn–Off Delay Time	R _G = 2.35Ω				170	
t _f	Fall Time					130	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I _S	Continuous Source Current					12	A
I _{SM}	Pulse Source Current ²					48	
V _{SD}	Diode Forward Voltage ¹	I _S = 12A	T _J = 25°C			1.7	V
		V _{GS} = 0					
t _{rr}	Reverse Recovery Time	I _F = 12A	T _J = 25°C			1600	ns
Q _{rr}	Reverse Recovery Charge ¹	d _i / d _t ≤ 100A/μs V _{DD} ≤ 50V				14	μC
t _{on}	Forward Turn–On Time			Negligible			
PACKAGE CHARACTERISTICS							
L _D	Internal Drain Inductance (measured from 6mm down drain lead to centre of die)				5.0		nH
L _S	Internal Source Inductance (from 6mm down source lead to source bond pad)				13		
THERMAL CHARACTERISTICS							
R _{θJC}	Thermal Resistance Junction – Case					1.0	°C/W
R _{θCS}	Thermal Resistance Case – Sink				0.12		
R _{θJA}	Thermal Resistance Junction – Ambient					30	

Notes

1) Pulse Test: Pulse Width $\leq 300\text{ms}$, $\delta \leq 2\%$

2) Repetitive Rating – Pulse width limited by maximum junction temperature.

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

E-mail: sales@semelab.co.uk

Website: <http://www.semelab.co.uk>